



POWERCUT-1250 / 1500

MANUAL & MECHANIZED PLASMARC CUTTING PACKAGE



Installation, Operation and Service Manual (GB)

This manual provides complete instructions for MANUAL CONSOLES starting with Serial Number PxxJ245xxx, May 2003:

This manual provides complete instructions for MECHANIZED CONSOLES starting with Serial Number PxxJ316xxx, May 2003:

0558004232

**BE SURE THIS INFORMATION REACHES THE OPERATOR.
YOU CAN GET EXTRA COPIES THROUGH YOUR SUPPLIER.**

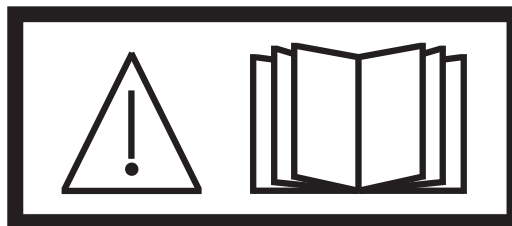
CAUTION

These INSTRUCTIONS are for experienced operators. If you are not fully familiar with the principles of operation and safe practices for arc welding and cutting equipment, we urge you to read our booklet, "Precautions and Safe Practices for Arc Welding, Cutting, and Gouging," Form 52-529. Do NOT permit untrained persons to install, operate, or maintain this equipment. Do NOT attempt to install or operate this equipment until you have read and fully understand these instructions. If you do not fully understand these instructions, contact your supplier for further information. Be sure to read the Safety Precautions before installing or operating this equipment.

USER RESPONSIBILITY

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and/or inserts when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically. Malfunctioning or poorly maintained equipment should not be used. Parts that are broken, missing, worn, distorted or contaminated should be replaced immediately. Should such repair or replacement become necessary, the manufacturer recommends that a telephone or written request for service advice be made to the Authorized Distributor from whom it was purchased.

This equipment or any of its parts should not be altered without the prior written approval of the manufacturer. The user of this equipment shall have the sole responsibility for any malfunction which results from improper use, faulty maintenance, damage, improper repair or alteration by anyone other than the manufacturer or a service facility designated by the manufacturer.



READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE INSTALLING OR OPERATING.

PROTECT YOURSELF AND OTHERS!

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Safety Precautions

Users of ESAB welding and plasma cutting equipment have the ultimate responsibility for ensuring that anyone who works on or near the equipment observes all the relevant safety precautions. Safety precautions must meet the requirements that apply to this type of welding or plasma cutting equipment. The following recommendations should be observed in addition to the standard regulations that apply to the workplace.

All work must be carried out by trained personnel well acquainted with the operation of the welding or plasma cutting equipment. Incorrect operation of the equipment may lead to hazardous situations which can result in injury to the operator and damage to the equipment.

1. Anyone who uses welding or plasma cutting equipment must be familiar with:
 - its operation
 - location of emergency stops
 - its function
 - relevant safety precautions
 - welding and / or plasma cutting
2. The operator must ensure that:
 - no unauthorized person stationed within the working area of the equipment when it is started up.
 - no one is unprotected when the arc is struck.
3. The workplace must:
 - be suitable for the purpose
 - be free from drafts
4. Personal safety equipment:
 - Always wear recommended personal safety equipment, such as safety glasses, flame proof clothing, safety gloves.
 - Do not wear loose fitting items, such as scarves, bracelets, rings, etc., which could become trapped or cause burns.
5. General precautions:
 - Make sure the return cable is connected securely.
 - Work on high voltage equipment **may only be carried out by a qualified electrician.**
 - Appropriate fire extinguishing equipment must be clearly marked and close at hand.
 - Lubrication and maintenance **must not** be carried out on the equipment during operation.



CAUTION

Class A (400V CE) equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There may be potential difficulties in ensuring electromagnetic compatibility of Class A equipment in those locations due to conducted as well as radiated disturbances.



WARNING

WELDING AND PLASMA CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING OR CUTTING. ASK FOR YOUR EMPLOYER'S SAFETY PRACTICES WHICH SHOULD BE BASED ON MANUFACTURERS' HAZARD DATA.

ELECTRIC SHOCK - Can kill.

- Install and earth (ground) the welding or plasma cutting unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing.
- Insulate yourself from earth and the workpiece.
- Ensure your working stance is safe.

FUMES AND GASES - Can be dangerous to health.

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to take fumes and gases away from your breathing zone and the general area.

ARC RAYS - Can injure eyes and burn skin.

- Protect your eyes and body. Use the correct welding / plasma cutting screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

FIRE HAZARD

- Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby.

NOISE - Excessive noise can damage hearing.

- Protect your ears. Use earmuffs or other hearing protection.
- Warn bystanders of the risk.

MALFUNCTION - Call for expert assistance in the event of malfunction.

READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE INSTALLING OR OPERATING.

PROTECT YOURSELF AND OTHERS!

POWERCUT-1250 / 1500
MANUAL PLASMARC CUTTING PACKAGE

**WARNING**

Use only the ESAB PT-32EH Plasmarc torch with this console. Use of torches not designed for use with this console could create an **ELECTRIC SHOCK HAZARD**.

1.0 GENERAL

The Powercut-1250/1500 is a compact, completely self-contained plasma cutting system. As shipped, the system is fully assembled and ready to cut after being connected to input power and a source of compressed air (90-150 psi / 6.2 to 10.3 bar). The Powercut package uses the heavy-duty PT-32EH (Manual Plasma) torch to deliver cutting power for severing materials up to 1-1/2 inch (38.1mm) thick on the PC-1250 and 1-3/4 inch (45mm) thick on the PC-1500. Refer to the following pages for descriptions of the Powercut packages available as well as performance specifications.

1.1 SCOPE

The purpose of this manual is to provide the operator with all the information required to install and operate the Powercut plasma arc cutting package. Technical reference material is also provided to assist in troubleshooting the cutting package.



Typical Front View



"Single Voltage" Version Back View

1.2.1 PC-1250 MANUAL PLASMA

PT-32EH Spare Parts Kit	0558003508
PT-32EH, 400 V Long Heat Shield (LHS), Spare Parts Kit, CE units	
only	0558003560



	<i>Max Speeds</i> <i>Carbon Steel</i>	
Plate	Drop Cut	Sever
<i>Inches (mm)</i>	<i>IPM (mm/min)</i>	<i>IPM (mm/min)</i>
0.250 (6.35)	131 (3327.4)	135 (3429)
0.500 (12.7)	50 (1270)	53 (1346.2)
0.750 (19.05)	21 (533.4)	23 (584.2)
1.000 (25.4)	10 (254)	12 (304.8)
1.250 (31.75)	6 (152.4)	7 (177.8)
1.500 (38.1)	--- (---)	3 (76.2)

1.2.2 PC-1500 MANUAL PLASMA

The PowerCut-1500 plasma cutting package combines the proven reliability of the PowerCut-1500 with the newly designed PT-32EH torch. The very strong composite case material makes the PowerCut-1500 an excellent addition to any equipment rental fleet. The PT-32EH plasma cutting torch is designed to provide increased performance and longer consumable life resulting in higher production rates at lower costs.

Specifications: PowerCut-1500

Cuts 1-1/2 in. (38mm); severs 1-3/4 in. (45mm)

1 ph. Input.....208/230 vac, 1 ph, 50/60 Hz, 82/74 A

1 ph. Output.....90 amps @ 40% duty cycle

3 ph. Input.....208/230 vac, 3 ph, 50/60 Hz, 44/40 A

.....230/460 vac, 3 ph, 50/60 Hz, 40/27 A

.....400 vac, 3ph, 50/60 Hz, 26 A

400V CE Mains Supply $S_{sc\ min}$ 3.8MVA

..... Z_{max} 0.042 Ω

.....575 vac, 3ph, 50/60 Hz, 18 A

3 ph. Output.....90 amps @ 60% duty cycle

Dimensions W = 12.5" (318mm)

.....H = 16.5" (419mm)

.....D = 31.5" (800mm)

Weight 94 lbs. (42.7kg)

Air Requirements 350 cfh @ 80 psig (165 l/min @ 5.5 bars)

400V CE Mains Supply, $S_{sc\ min}$

Minimum short circuit power on the network in accordance with IEC61000-3-12.

400V CE Mains Supply, Z_{max}

Maximum permissible line on the network impedance in accordance with IEC61000-3-11.

Torch

PowerCut-1500 uses the PT-32EH torch. For complete list and breakdown of parts, refer to Figure 1.1.

Ordering Information:

PowerCut-1500, 230/460 V, 25' (7.6m) PT-32EH.....0558001942

PowerCut-1500, 230/460 V, 50' (15.2m) PT-32EH 0558001943

PowerCut-1500, 575 V, 25' (7.6m) PT-32EH.....0558001948

PowerCut-1500, 575 V, 50' (15.2m) PT- 32EH.....0558001949

PowerCut-1500, 400 V, "CE" 25' (7.6m) PT-32EH 0558001945

PowerCut-1500, 400 V, "CE" 50' (15.2m) PT-32EH.....0558001946

PowerCut-1500, 460 V, 25' (7.6m) PT-32EH.....0558005902

PowerCut-1500, 460 V, 50' (15.2m) PT- 32EH 0558005903

PowerCut-1500, 400 V, 25' (7.6m) PT-32EH.....0558007827

The components that are included in the Powercut-1500 packages (Console, Torch, Spare Parts Kit) may be purchased separately by using the appropriate P/N when placing orders. Individual part numbers are listed below:

Consoles:

PowerCut-1500 (208)230/460 V, 50/60 Hz, 1/3-ph.....0558003570

PowerCut-1500 (208)230/460 V, 50/60 Hz, 1/3-ph (BL) 0558003517

PowerCut-1500 575 V, 50/60 Hz, 3-ph.....0558001950

PowerCut-1500 400 V, CE, 50 Hz, 3-ph.....0558001947

PowerCut-1500 460 V, 50/60 Hz, 3-ph.....0558005900

PowerCut-1500 400 V, 50 Hz, 3-ph 0558007826



PT-32EH Cut Data-90 AMPS

Powercut-1500, PT-32EH, 90A Nozzle P/N 0558002837
Air Pressure - 80 psi (5.5 bar) , 5/32" (4.0 mm)Standoff

	<i>Max Speeds Carbon Steel</i>	
Plate <i>Inches (mm)</i>	Drop Cut <i>IPM (mm/min)</i>	Sever <i>IPM (mm/min)</i>
0.250 (6.35)	151 (3835.4)	153 (3886.2)
0.500 (12.7)	56 (1422.4)	58 (1473.2)
0.750 (19.05)	25 (635)	26 (660.4)
1.000 (25.4)	16 (406.4)	18 (457.2)
1.250 (31.75)	11 (279.4)	12 (304.8)
1.500 (38.1)	7 (177.8)	8 (203.2)

PT-32EH Torches:

PT-32EH Torch, 25-ft. (7.6m).....0558003548

PT-32EH Torch, 50-ft. (15.2m) 0558003549

Spare Parts Kits: (see section 1.2.3)

PT-32EH Spare Parts Kit 0558003062

PT-32EH, 400 V Long Heat Shield (LHS), Spare Parts Kit, CE units
only.....0558003557

1.2.3 SPARE PARTS / OPTIONAL ACCESSORIES (PC-1250 / 1500 MANUAL PLASMA)

Spare Parts Kits:**Contents of PT-32EH Spare Parts Kit, 70 amp
P/N 0558003508**

Description	P/N	Quantity
Heat Shield	0558001957	2
70 amp Nozzle	0558002618	4
40 amp drag Nozzle	0558002908	1
Electrode	0558001969	3
Valve Pin	0558001959	1
Fuse 2amp, 600vdc	0558001379	1
Stand-off Guide	0558002393	1
Wrench	19129 (0558000808)	1
Lubricant	17672 (0558000443)	1

**Contents of PT-32EH (LHS) Spare Parts Kit, 70 amp
P/N 0558003560, "CE" units only**

Description	P/N	Quantity
Long Heat Shield (LHS)	0558003110	2
70 amp Nozzle	0558002618	4
40 amp drag Nozzle	0558002908	1
Electrode	0558001969	3
Valve Pin	0558001959	1
Fuse 2amp, 600vdc	0558001379	1
Drag Heat Shield	0558004206	1
Wrench	19129 (0558000808)	1
Lubricant	17672 (0558000443)	1

The PowerCut-1250 comes out of the box ready to go. The torch is attached with parts in place, primary cord is attached and the filter/regulator is installed. Just hook up the air, power and begin cutting.

(NOTE: Part numbers in parenthesis apply to "CE"/European units only.)

**Contents of PT-32EH Spare Parts Kit, 90 amp
P/N 0558003062**

Description	P/N	Quantity
Heat Shield	0558001957	2
90 amp Nozzle	0558002837	4
40 amp drag Nozzle	0558002908	1
Electrode	0558001969	3
Valve Pin	0558001959	1
Fuse 2amp, 600vdc	0558001379	1
Stand-off Guide	0558002393	1
Wrench	19129 (0558000808)	1
Lubricant	17672 (0558000443)	1

**Contents of PT-32EH (LHS) Spare Parts Kit, 90 amp
P/N 0558003557, "CE" units only**

Description	P/N	Quantity
Long Heat Shield (LHS)	0558003110	2
90 amp Nozzle	0558002837	4
40 amp drag Nozzle	0558002908	1
Electrode	0558001969	3
Valve Pin	0558001959	1
Fuse 2amp, 600vdc	0558001379	1
Drag Heat Shield	0558004206	1
Wrench	19129 (0558000808)	1
Lubricant	17672 (0558000443)	1

The PowerCut-1500 comes out of the box ready to go. The torch is attached with parts in place, primary cord is attached and the filter/regulator is installed. Just hook up the air, power and begin cutting.

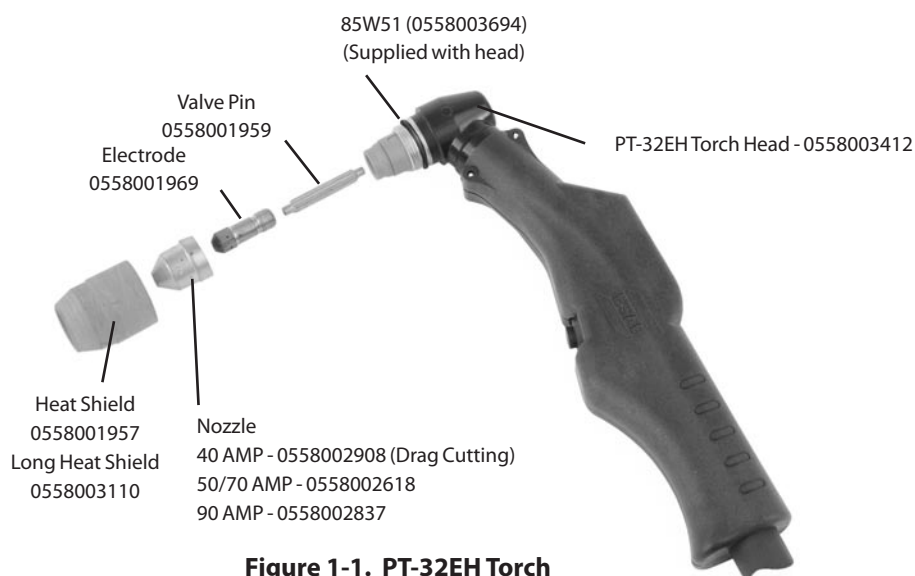


Figure 1-1. PT-32EH Torch

Optional Accessories:

70 A Spare Parts Kit	0558003508
70 A 400 V LHS Spare Parts Kit, "CE" units	0558003560
90 A Spare Parts Kit	0558003062
90 A 400 V LHS Spare Parts Kit, "CE" units	0558003557

Plasma Flow Measuring Kit:

This valuable troubleshooting tool allows measurement of the actual plasma gas flow through the torch 19765 (0558000739)

Torch Guide Kit:

This complete kit, in a rugged plastic carrying case, includes attachments for circle and straight line cutting on ferrous and non-ferrous metals, 1 3/4" - 42" (44.5mm - 1066.8 mm) Radius, Deluxe 0558003258
Basic, 1 3/4" - 28" (44.5mm - 711.2 mm) Radius 0558002675

Stand-off Guide

For proper stand-off distance when drag cutting 0558002393

40 amp Drag Nozzle 0558002908

Gouging Nozzle 0558003089

Heat Shield Gouging 0558003090

Drag Heat Shield (Standard) 0558003374

Drag Heat Shield (Heavy Duty) 0558004206

Wheel Kit

For easy transport of system 0558003060

Torch Wrap

This enables operator to store spare parts kit, wrap torch and work cable for easy transport and storage 0558003059

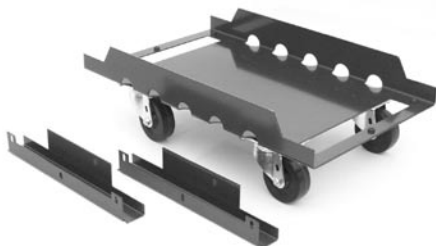
(NOTE: Part numbers in parenthesis apply to "CE"/European units only.)

**Drag Heat Shield (Standard)**

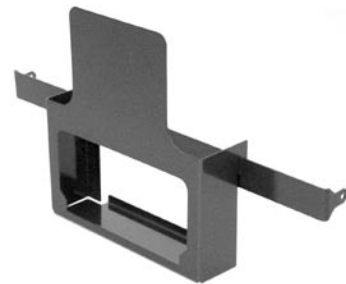
Maintains a constant stand-off, Good life in most applications 0558003374

**Drag Heat Shield (Heavy Duty)**

Maintains a constant stand-off, Long life, Suitable for piercing 0558004206

**Wheel Kit**

For easy transport of system 0558003060

**Torch Wrap**

This enables operator to store spare parts kit, wrap torch and work cable for easy transport and storage 0558003059



Powercut shown with Optional Torch Wrap and Spare Parts Kit Holder installed.

2.0 INSTALLATION - MANUAL PLASMA CUTTING PACKAGE

2.1 GENERAL

Proper installation is important for satisfactory and trouble-free operation of the PowerCut cutting package. It is suggested that each step in this section be studied carefully and followed closely.

2.2 EQUIPMENT REQUIRED

A source of clean, dry air that supplies 350 cfh (165.2 l/m) at 80 psig (5.5 bar) is required for the cutting operation. The air supply should not exceed 150 psig (10.3 bar) (the maximum inlet pressure rating of the air filter-regulator supplied with the package).

2.3 LOCATION

Adequate ventilation is necessary to provide proper cooling of the PowerCut. The amount of dirt, dust, and excessive heat to which the equipment is exposed, should be minimized. There should be at least one foot of clearance between the PowerCut power source and wall or any other obstruction to allow freedom of air movement through the power source.

2.4 INSPECTION

- A. Remove the shipping container and all packing material and inspect for evidence of concealed damage which may not have been apparent upon receipt of the PowerCut. Notify the carrier of any defects or damage at once.
- B. Check container for any loose parts prior to disposing of shipping materials.
- C. Check air louvers and any other openings to ensure that any obstruction is removed.

CAUTION

Installing or placing any type of filtering device will restrict the volume of intake air, thereby subjecting the power source internal components to overheating. The warranty is void if any type of filter device is used.

**WARNING**

ELECTRIC SHOCK CAN KILL! Precautionary measures should be taken to provide maximum protection against electrical shock. Be sure that all power is off by opening the line (wall) disconnect switch and by unplugging the power cord to the unit when connections are made inside of the power source.

2.5 PRIMARY ELECTRICAL INPUT CONNECTIONS - MANUAL PLASMA CUTTING PACKAGE

The PowerCut-1250 / 1500 consoles are equipped with approximately 10-ft. of 4-conductor input power cable for 3-phase connection. If single-phase connection is desired, tape back the red (lt. blue) wire on the input power cable. Connect the single-phase input to the white and black wires only. When operating this machine from a single-phase source, it must be connected to a dedicated 100 Amp feed. Due to the higher input current requirements, the duty cycle of the machine is lower than in three-phase operation. Single phase duty cycle is 60% for PC-1250 and 40% for PC-1500.

Connect your air supply to the inlet connection of the filter-regulator.

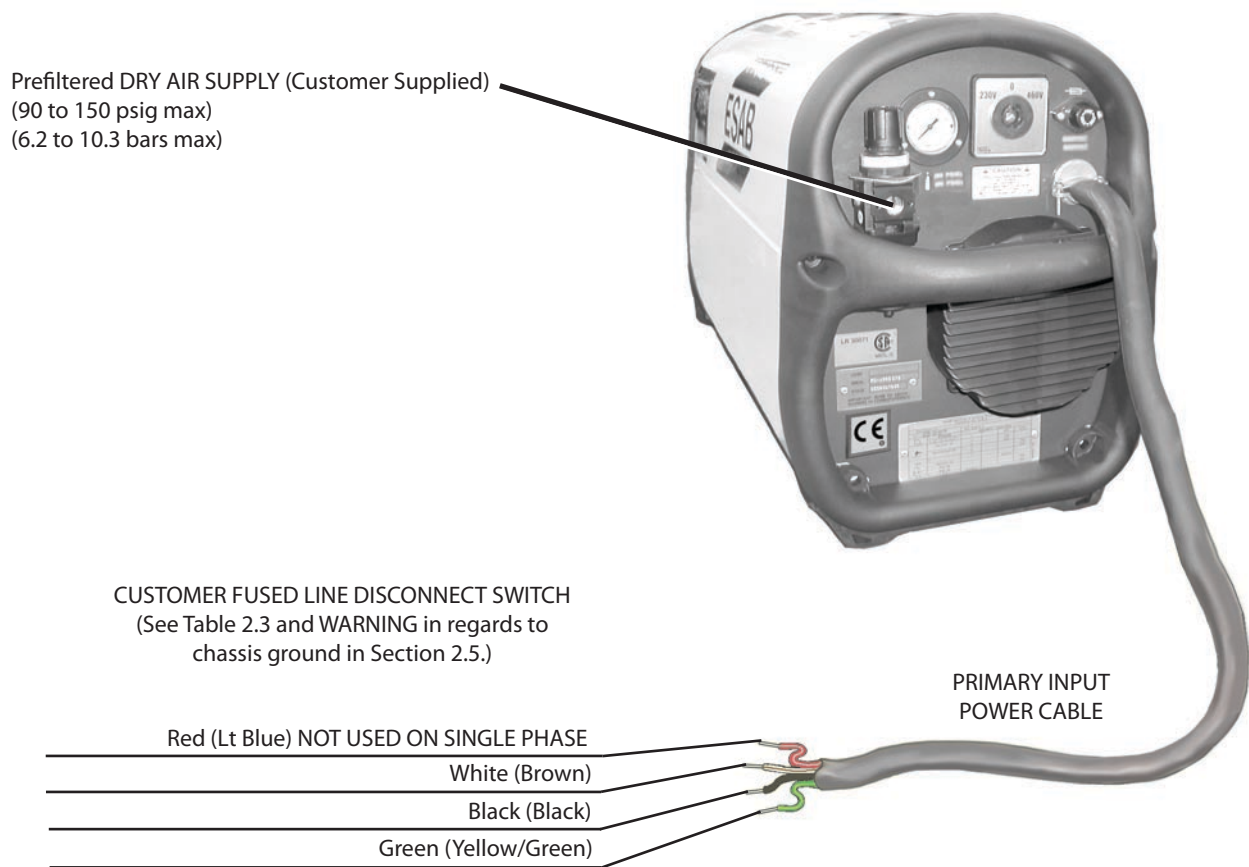


Figure 2-1. Input Connections

**WARNING**

ELECTRIC SHOCK CAN KILL! Before making electrical input connections to the power source, "Machinery Lockout Procedures" should be employed. If the connections are to be made from a line disconnect switch, place the switch in the off position and padlock it to prevent inadvertent tripping. If the connection is made from a fusebox, remove the corresponding fuses and padlock the box cover. If it is not possible to use padlocks, attach a red tag to the line disconnect switch (or fuse box) warning others that the circuit is being worked on.

**WARNING**

The chassis must be connected to an approved electrical ground. Failure to do so may result in electrical shock, severe burns or death.

**WARNING**

Before making any connections to the power source output terminals, make sure that all primary input power to the power source is deenergized (off) at the main disconnect switch and that the input power cable is unplugged.

Before connecting to input power, make sure there is a line (wall) disconnect switch with fuses or circuit breakers at the main power panel. You may either use the factory-installed input power cable (4/c, type SO (90 °C), 10 ft (3.1 m) length) or provide your own input power leads. If you choose to provide your own, make sure they are insulated copper conductors. You must have two (single-phase) or three (three-phase) power leads and one ground wire. The wires may be heavy rubber covered cable or may be run in a solid or flexible conduit. Refer to Table 2-1 and 2-2 for recommended input conductors and line fuse sizes.

**Table 2-1. (PC-1250) Recommended Sizes
For Input Conductors and Line Fuses**

Input Requirements			Input & Gnd	Fuse
Volts	Phase	Amps	Conductor	Size
			CU/AWG	Amps
208	1	67A	6	100
208	3	33A/Ph.	6	50
230	1	61A	6	100
230	3	29A/Ph.	6	50
460	3	20	6	50
400	3	18	6mm ²	50
575	3	15	10	25

**Table 2-2. (PC-1500) Recommended Sizes
For Input Conductors and Line Fuses**

Input Requirements			Input & Gnd	Fuse
Volts	Phase	Amps	Conductor	Size
			CU/AWG	Amps
208	1	82A	6	100
208	3	44A/Ph.	6	80
230	1	74A	6	100
230	3	40A/Ph.	6	80
460	3	27	6	50
400	3	24	6mm ²	50
575	3	18	10	50

NOTE !!!**400V CE Mains Supply Requirements:**

High power equipment may, due to the primary current drawn from the mains supply, influence the power quality of the grid. Therefore connection restrictions or requirements regarding the maximum permissible mains impedance or the required minimum supply capacity at the interface point to the public grid may apply for some types of equipment (see technical data). In this case it is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment may be connected.

2.6 SECONDARY OUTPUT CONNECTIONS FOR MANUAL CUTTING

The torch comes factory installed.



Figure 2-2. PowerCut Interconnection Diagram

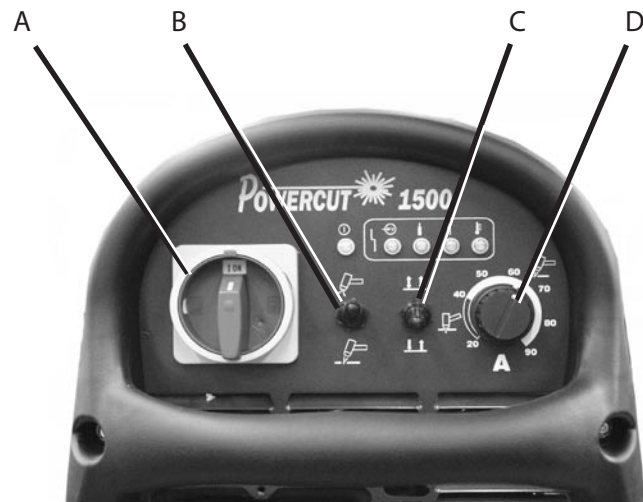


Figure 3-1A. PowerCut-1250 / 1500 Controls

3.0 OPERATION

3.1 PowerCut-1250 / 1500 CONTROLS

- A. Power Switch.** When placed in ON position, the white power light will glow indicating control circuit is energized.
- B. Air Test Switch.** When placed in TEST position, air filter-regulator can be adjusted to desired pressure (80 psig / 5.5 bar) before cutting operations. Allow air to flow for a few minutes. This should remove any condensation that may have accumulated during shutdown period. Be sure to place switch in OPERATE position before starting cutting operations.
- C. Trigger Lock Switch.**
- Manual Operation** using the PT-32EH torch - When placed in LOCK position, this permits releasing torch switch button after cutting arc has been initiated. To extinguish arc at end of cut, press and release torch switch button again or pull torch away from work. When placed in UNLOCK position, torch switch must be held closed by the operator during the entire cutting operation and then released at the end of cut.
 - Mechanized Operation** using the PT-21AMX torch - In mechanized operation the Trigger Lock function disabled. Instead, the switch functions as an "Auto-Restrike" selector. To turn Auto-Restrike "on" (grate cutting), place the switch in the up position. To turn Auto-Restrike "off" (grate cutting), place the switch in the down position.



**TRIGGER
LOCK**

Auto-Restrike "on"

UNLOCK

Auto-Restrike "off"

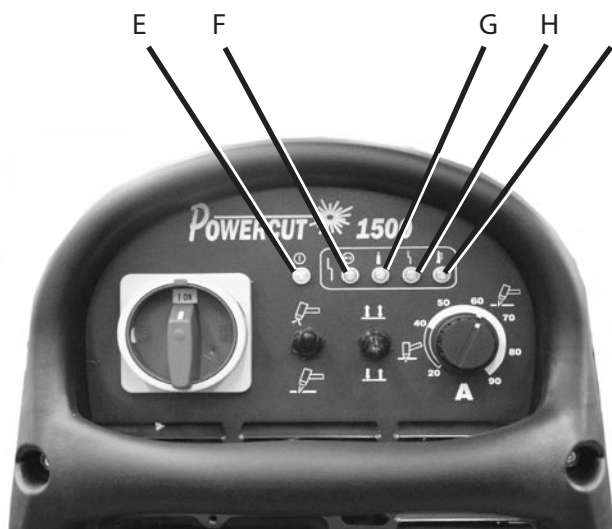


Figure 3-1B. PowerCut-1250 / 1500 Controls

- D. Output Current Control.** Adjustable from 20 to 70 amperes on Powercut-1250. Adjustable from 20 to 90 amperes on Powercut-1500.
- E. Power "ON" Indicator:** Illuminates whenever the front panel power switch is in the ON position.
- F. AC Line Indicator or High/Low Line Voltage Indicator:** This fault light will blink when the input voltage is outside the "+ or -" 15% range of the input rating.
- G. Gas Flow Indicator:** This fault light will blink when the air flow supply is low or has no back pressure.
- H. Fault Indicator:** When this light blinks, either the system failed to initiate a pilot arc after a number of attempts, or there has been an over-current event within the system. If the light blinks for 10 seconds and then stops, the problem is pilot arc initiation. Check the consumables in the torch.

If the light continues to blink, and the system does not reset, the fault is an over-current event. See troubleshooting section.
- I. Over Temperature Indicator:** This fault light will blink to indicate that the duty cycle has been exceeded. Allow the power source to cool down before returning to operation.

All fault signals will remain on for a minimum of 10 seconds. If fault clears, all will reset automatically except for over-current. To clear over-current, the power must be shut off for 5 seconds and then turned back on.

**WARNING**

ELECTRIC SHOCK can kill.

- Do NOT operate the unit with the cover removed.
- Do NOT apply power to the unit while holding or carrying the unit.
- Do NOT touch any torch parts forward of the torch handle (nozzle, heatshield, electrode, etc.) with power switch on.

**WARNING**

ARC RAYS can burn eyes and skin;
NOISE can damage hearing.

- Wear welding helmet with No. 6 or 7 lens shade.
- Wear eye, ear, and body protection.

NOTE: Trigger Lock Switch.

Manual Operation using the PT-32EH torch - When placed in LOCK position, this permits releasing torch switch button after cutting arc has been initiated. To extinguish arc at end of cut, press and release torch switch button again or pull torch away from work. When placed in UNLOCK position, torch switch must be held closed by the operator during the entire cutting operation and then released at the end of cut.

CAUTION

Position the PowerCut at least 10 feet (3 meters) from the cutting area. Sparks and hot slag from the cutting operation can damage the unit.

3.2 PT-32EH TORCH USED WITH MANUAL PLASMA ONLY**3.2.1 CUTTING WITH THE POWERCUT-1250 / 1500 USING THE PT-32EH TORCH (MANUAL PLASMA ONLY)**

Use the following procedures to cut with the PT-32EH torch.

- Make sure that the wall disconnect switch is on. Turn on the Front Panel Power Switch.
- Set Pressure Regulator to 80 psig (5.5 bar).
- Hold the torch nozzle approximately 1/8 to 3/16 inch (3.2 to 4.8 mm) above the work and tilted at about 15 - 30°. This reduces the chance of spatter entering the nozzle. If the PT-32EH's stand-off guide (P/N 0558002393) is being used, the distance between Electrode and Work Piece will be approx. 3/16" (4.8 mm).
- Depress the torch switch. Air should flow from the torch nozzle.
- Two seconds after depressing the torch switch, the pilot arc should start. The main arc should immediately follow, allowing the cut to begin. (If using the trigger LOCK mode, torch switch may be released after establishing the cutting arc.) See note.



Trigger Lock Switch

- F. After starting the cut, the torch should be maintained at a 5-15° forward angle. This angle is especially useful in helping to create a "drop" cut. When not using the stand-off guide, the nozzle should be held approximately 1/4 inch (6.4mm) from the work.

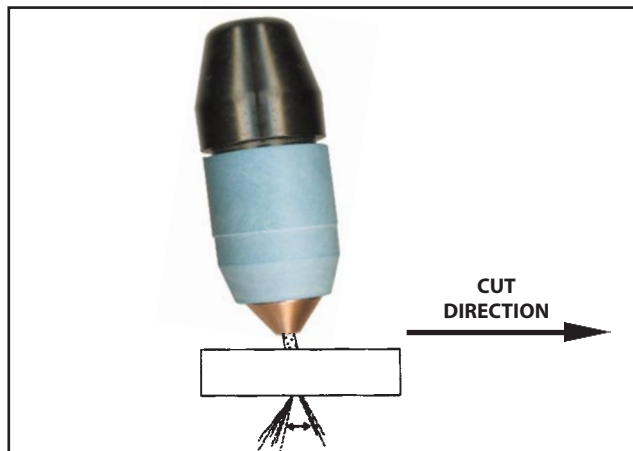


Figure 3-2a. Recommended Torch Angle of 5° to 15° During Cutting

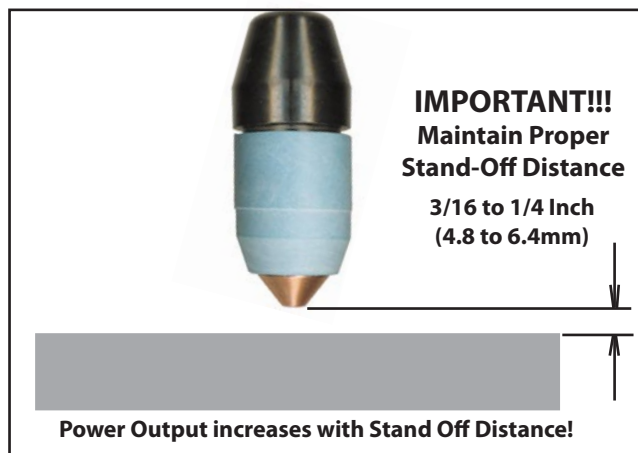


Figure 3-2b. Stand-off vs. Power Output During Cutting

- G. When ending a cut, the torch switch should be released (press and release if using trigger LOCK mode) and the torch lifted off the workpiece just before the end of the cut. This is to prevent the high frequency from reigniting after cutting arc extinguishes and causing damage to the nozzle (double arcing).
- H. For rapid re-starts, such as grate or heavy mesh cutting, do not release the torch switch. In the postflow mode, the arc can be re-started immediately by depressing the torch switch. This avoids the 2-second preflow portion of the cutting cycle.

3.2.2 Drag Cutting with the PT-32EH Torch / PowerCut package.

A. LOW CURRENT AUTO-DRAG FEATURE

If drag cutting is desired for thin material under 3/8" (9.5mm) thick, remove the standard 70 / 90 amp nozzle from the PT-32EH torch and install ESAB's 40 amp nozzle. Lower the current level setting to be within the AUTO-DRAG range of 20 to 40 amps (see Auto Drag Scale on front panel). Then follow steps in Section 3.2.1. Also refer to PT-32EH Instruction Manual No. F-15-747.

B. HIGH CURRENT DRAG CUTTING

If drag cutting is desired on materials above 3/8" (9.5mm) thick, be sure that the 70 amp / 90 amp nozzle is installed in the PT-32EH torch. Attach ESAB's stand-off guide and operate as shown in Figure 3.3.

CAUTION

Drag cutting, even with lower current levels may significantly reduce the life of torch consumables. Attempting to Drag Cut with higher currents greater than (40 amps) may cause immediate catastrophic consumable damage.

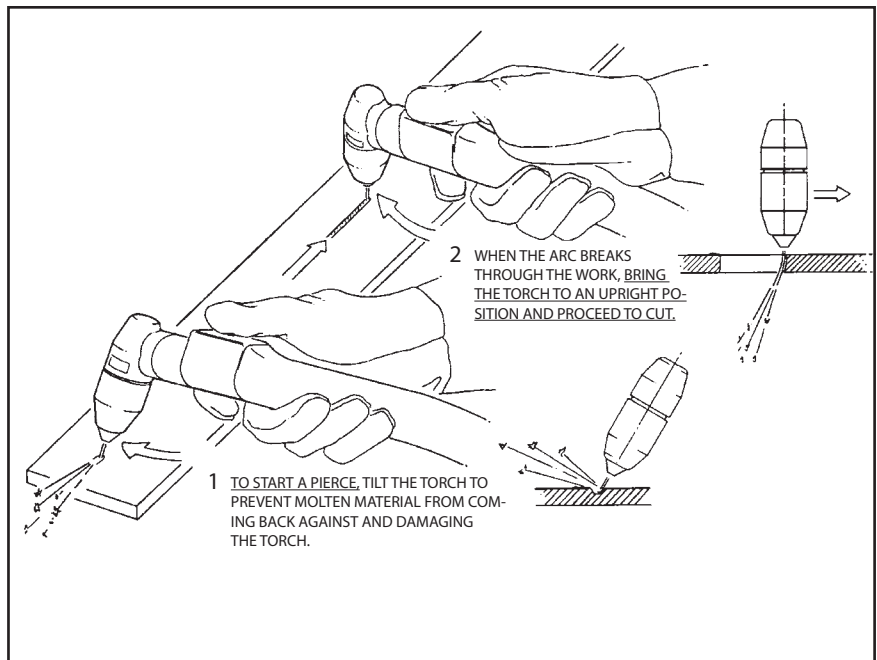


Figure 3-3. Piercing Technique using the PT-32EH

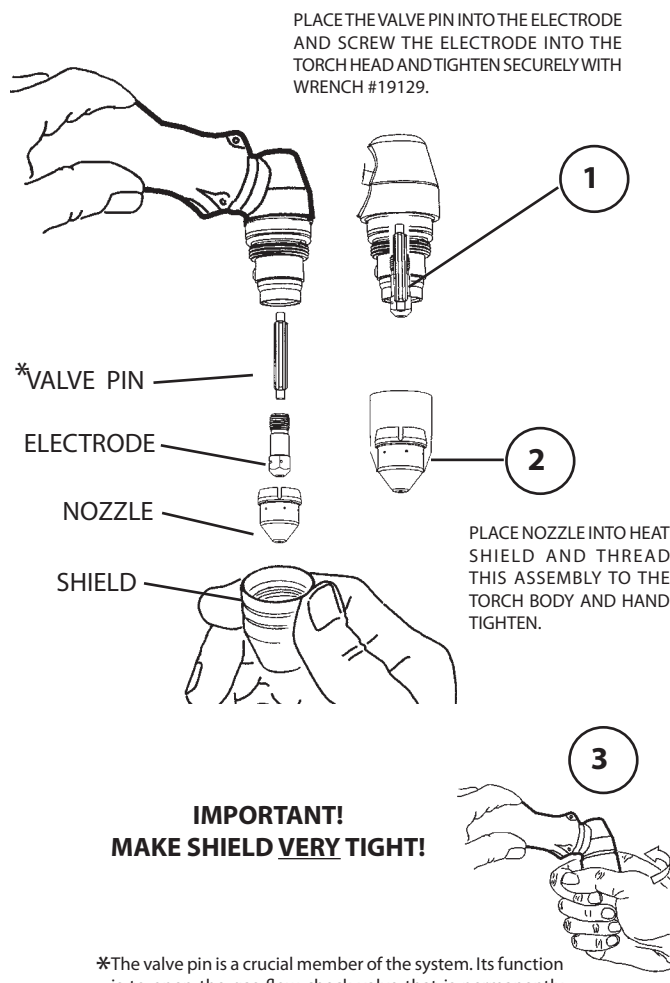
3.2.3 PT-32EH TORCH PARTS INSTALLATION (MANUAL PLASMA ONLY)

**WARNING**

Make sure power switch on POWERCUT is in OFF position before working on the torch.

**WARNING**

The PT-32EH torch head contains a gas flow check valve that acts in conjunction with the flow switch and circuitry within the power source. This system prevents the torch from being energized with high voltage if the torch switch is accidentally closed when the shield is removed. Always replace torch with the with the proper torch manufactured by ESAB since it alone contains ESAB's patented safety interlock.



*The valve pin is a crucial member of the system. Its function is to open the gas flow check valve that is permanently assembled within the torch head. If the pin is not correctly placed in the electrode, the valve will not open and the system will not function. The valve pin also improves electrode cooling by increasing the velocity of air over the inner surface of the electrode.

Fig 3.4. Exploded View of PT-32EH Torch

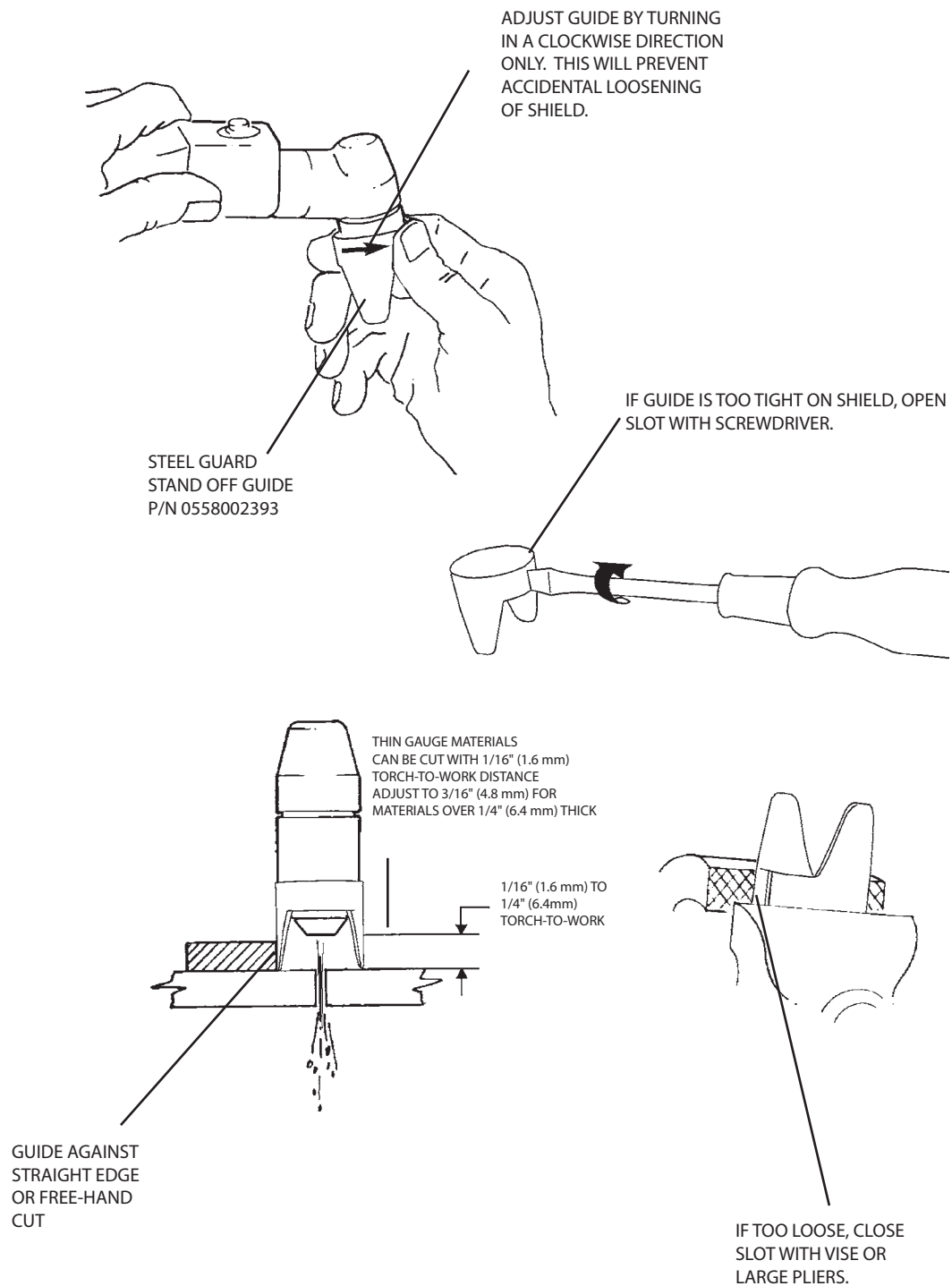
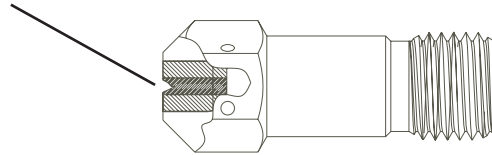


Figure 3-5. Installation and Operation of Stand-off Guide (PT-32EH ONLY)

3.3 PT-32EH POSSIBLE CUTTING ISSUES

Replace when eroded beyond
.06" (1.5mm) Depth.



CAUTION

REPLACE ELECTRODE BEFORE PITTING
BECOMES DEEPER THAN .06 INCH (1.5
MM)

Figure 3-6. Electrode Wear Limit

NOTE: When replacing the nozzle, always inspect the electrode for wear. If more than .06" (1.5mm) of electrode has eroded, replace the electrode. If the electrode is used beyond this recommended wear limit, damage to the torch and power source may occur. Nozzle life is also greatly reduced when using the electrode below the recommended limit.

POWERCUT-1250 / 1500
MECHANIZED PLASMARC CUTTING PACKAGE

**WARNING**

Use only the ESAB PT-21AMX Plasmarc torch with this console. Use of torches not designed for use with this console could create an **ELECTRIC SHOCK HAZARD**.

1.0 GENERAL

The Powercut-1250 / 1500 is a compact, completely self-contained plasma cutting system. The system is shipped with the PT-21AMX mechanized torch. Torch must be wired to the console before operation. See section 2.6.1. The system is ready to cut after connections are made to the torch, input power and a source of compressed air (90-150 psi / 6.2 to 10.3 bar). The mechanized Powercut package uses the PT-21AMX mechanized plasma torch to deliver cutting power for severing materials up to 1-1/2 inch (38.1mm) thick on the PC-1250 and 1-3/4 inch (45mm) thick on PC-1500. Refer to the following pages for descriptions of the Powercut packages available as well as performance specifications.

1.1 SCOPE

The purpose of this manual is to provide the operator with all the information required to install and operate the Powercut plasma arc cutting package. Technical reference material is also provided to assist in troubleshooting the cutting package.



Typical Front View



"Single Voltage" Version Back View

1.2.2 PC-1500 MECHANIZED PLASMA

The PowerCut-1500 plasma cutting package combines the proven reliability of the PowerCut-1500 with the newly designed PT-21AMX torch. The PT-21AMX plasma cutting torch is designed to provide increased performance and longer consumable life resulting in higher production rates at lower costs.

Specifications: PowerCut-1500

Cuts 1-1/2 in. (38mm)	
1 ph. Input.....	208/230 vac, 1 ph, 50/60 Hz, 82/74 A
1 ph. Output.....	90 amps @ 40% duty cycle
3 ph. Input.....	208/230 vac, 3 ph, 50/60 Hz, 44/40 A
.....	230/460 vac, 3 ph, 50/60 Hz, 40/27 A
.....	400 vac, 3ph, 50/60 Hz, 26 A
400V CE Mains Supply	$S_{sc\ min}$ 3.8MVA
.....	Z_{max} 0.042 Ω
.....	575 vac, 3ph, 50/60 Hz, 18 A
3 ph. Output	90 amps @ 60% duty cycle
Dimensions	W = 12.5" (318mm)
.....	H = 16.5" (419mm)
.....	D = 31.5" (800mm)
Weight	94 lbs. (42.7kg)
Air Requirements	350 cfm @ 80 psig (165 l/min @ 5.5 bars)

400V CE Mains Supply, $S_{sc\ min}$

Minimum short circuit power on the network in accordance with IEC61000-3-12.

400V CE Mains Supply, Z_{max}

Maximum permissible line on the network impedance in accordance with IEC61000-3-11.

Torch

PowerCut-1500 uses the PT-21AMX torch. For complete list and breakdown of parts, refer to Figure 1.2.

Ordering Information:

PowerCut-1500,

230/460 V, 25' (7.6m) PT-21AMX.....	0558004191
230/460 V, 50' (15.2m) PT-21AMX	0558004192
400 V, "CE" 25' (7.6m) PT-21AMX	0558004193
400 V, "CE" 50' (15.2m) PT-21AMX.....	0558004194

230/460 V, 25' (7.6m) PT-21NR	0558005490
230/460 V, 50' (15.2m) PT-21NR.....	0558005491
400 V, "CE" 25' (7.6m) PT-21NR.....	0558005492
400 V, "CE" 50' (15.2m) PT-21NR	0558005493

The components that are included in the Powercut-1500 packages may be purchased separately by using the appropriate P/N when placing orders. Individual part numbers are listed below:

Consoles:

PowerCut-1500 (208)230/460 V, 50/60 Hz, 1/3-ph	0558004195
PowerCut-1500 400 V, CE, 50 Hz, 3-ph.....	0558004196



(NOTE:

Part numbers in parenthesis apply to "CE"/European units only.)

PT-21AMX Cut Data-90 AMPS

Powercut-1500, PT-21AMX, 90A Nozzle P/N 0558004269
Air Pressure - 85 psi (5.9 bar) ,
3/16 to 1/4" (4.8 -6.4 mm) Standoff

	Max Speeds Mild Steel	
Plate	Optimum	Maximum
<i>Inches (mm)</i>	<i>IPM (mm/min)</i>	<i>IPM (mm/min)</i>
0.250 (6.35)	120 (3048)	150 (3810)
0.500 (12.7)	49 (1244.6)	55 (1397)
0.750 (19.05)	22 (558.8)	25 (635)
1.000 (25.4)	12 (304.8)	13 (330.2)
1.250 (31.75)	7 (177.8)	9 (228.6)
1.500 (38.1)	3 (76.2)	5 (127)

PT-21AMX Torches:

Without Rack; 50 ft. (15.2m)	0558003615
With Rack; 50 ft. (15.2m)	0558003614
Without Rack; 25 ft. (7.6m)	0558003617
With Rack; 25 ft. (7.6m)	0558003616

Spare Parts Kits: (see section 1.2.3)

PT-21AMX Spare Parts Kit (50 Amp)	21370 (2461001)
PT-21AMX Spare Parts Kit (70 Amp)	21369 (0558000848)
PT-21AMX Spare Parts Kit (90 Amp)	0558004271 (0558004277)

1.2.3 SPARE PARTS / OPTIONAL ACCESSORIES (PC-1250 / 1500 MECHANIZED PLASMA)

**Contents of PT-21AMX Spare Parts Kit,
P/N 21370 (2461001) 50 Amp**

Description	STD P/N	(CE) P/N	Quantity
Heat Shield (50 A)	21447	(4485832)	2
Cutting Nozzle (50 A)	21330	(4485833)	5
Electrode	21150	(0558004262)	5
Electrode Insulator	21373	(4485837)	1
Electrode Holder Assy	21332	(4485840)	1
Baffle Tube	21374	(4485838)	1
Pilot Arc Adaptor	19497	(4485843)	1
O-ring	488157	(4485841)	5
Lubricant (1 oz.)	17672	(0558000443)	1
Seat/Baffle Wrench	21375	(4485842)	1
Hex-Key Wrench	93750006	(4485651)	1
Tool Box	950272	(0558004270)	1

**Contents of PT-21AMX Spare Parts Kit,
P/N 21369 (0558000848) 70 Amp**

Description	STD P/N	(CE) P/N	Quantity
Heat Shield (70/100 A)	21326	(4485831)	2
Heat Shield (50 A)	21447	(4485832)	1
Cutting Nozzle (50 A)	21330	(4485833)	5
Cutting Nozzle (70 A)	21329	(4485834)	5
Electrode	21150	(0558004262)	5
Electrode Insulator	21373	(4485837)	1
Electrode Holder Assy	21332	(4485840)	1
Baffle Tube	21374	(4485838)	1
Pilot Arc Adaptor	19497	(4485843)	1
O-ring	488157	(4485841)	5
Lubricant (1 oz.)	17672	(0558000443)	1
Seat/Baffle Wrench	21375	(4485842)	1
Hex-Key Wrench	93750006	(4485651)	1
Tool Box	950272	(0558004270)	1

**Contents of PT-21AMX Spare Parts Kit,
P/N 0558004271(0558004277) 90 Amp**

Description	STD P/N	(CE) P/N	Quantity
Heat Shield (70/100 A)	21326	(4485831)	2
Heat Shield (50 A)	21447	(4485832)	1
Cutting Nozzle (50 A)	21330	(4485833)	5
Cutting Nozzle (70 A)	21329	(4485834)	5
Cutting Nozzle (90 A)	0558004269		5
Electrode	21150	(0558004262)	5
Electrode Insulator	21373	(4485837)	1
Electrode Holder Assy	21332	(4485840)	1
Baffle Tube	21374	(4485838)	1
Pilot Arc Adaptor	19497	(4485843)	1
O-ring	488157	(4485841)	5
Lubricant (1 oz.)	17672	(0558000443)	1
Seat/Baffle Wrench	21375	(4485842)	1
Hex-Key Wrench	93750006	(44858442)	1
Tool Box	950272	(0558004270)	1

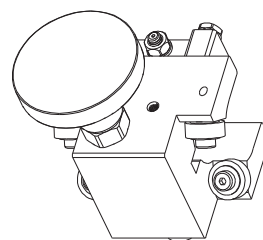
Optional Accessories:

Torch Holder Assembly 16V83 (0558004250)
 50 amp Spare Parts Kit 21370 (2461001)
 70 amp Spare Parts Kit 21369 (0558000848)
 90 amp Spare Parts Kit 0558004271 (0558004277)
 CNC Cable 50' (15.24 m)..... 57002249

Plasma Flow Measuring Kit

This valuable troubleshooting tool allows measurement of the actual plasma gas flow through the torch 19765 (0558000739)

(NOTE: Part numbers in parenthesis apply to "CE"/European units only.)



Torch Holder Assy..... 0558005926



Remote Hand Control Switch with 25 ft. (7.6m)
 lead for PT-21AMX 0558003612



Plasma Flow Measuring Kit..... 19765 (0558000739)

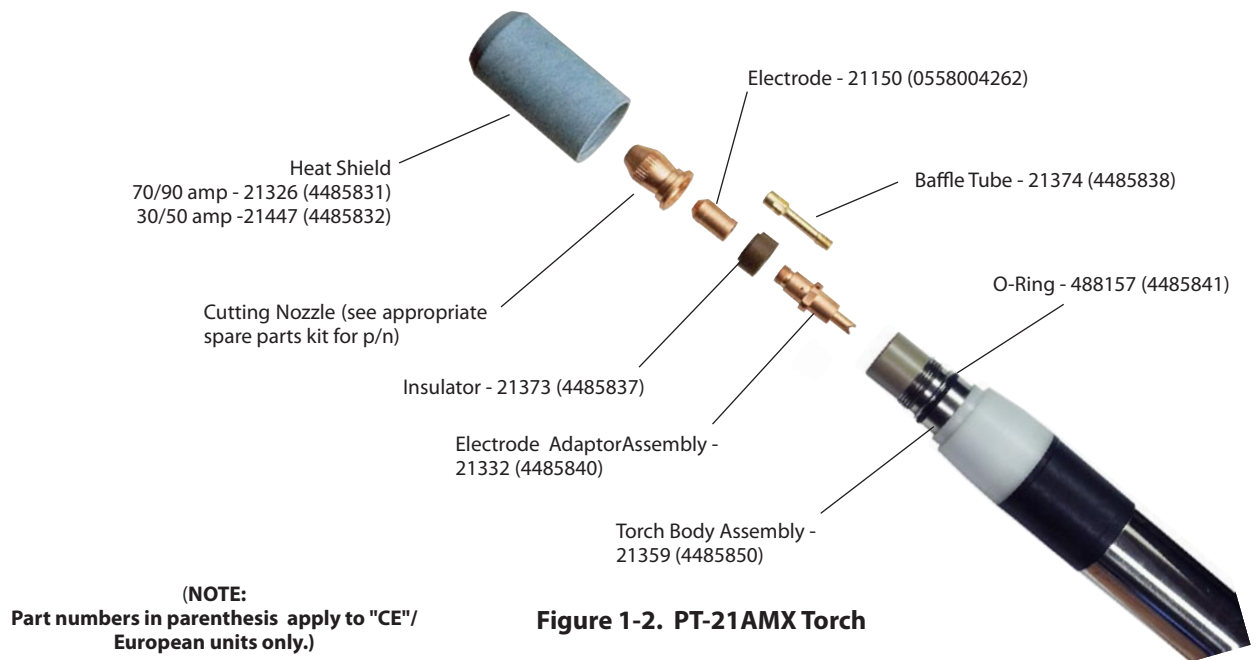


Figure 1-2. PT-21AMX Torch

Cutting Parameters for the PT-21AMX Torch

90AMP Data, Nozzle P/N 0558004269,
Heat Shield P/N 21326 (4485831)

Metal Thickness		Air Pressure		Stand-Off		Arc Voltage	Pierce Time
in.	mm	psig	bar	in.	mm	DC Volts	seconds
0.25	6	85	6	.188	5	110	0.1
0.50	13	85	6	.188	5	120	0.3
0.75	19	85	6	.188	5	125	1.0
1.00	25	85	6	.250	6	130	2.75
1.25	32	85	6	.250	6	140	NR
1.50	38	85	6	.250	6	145	NR

"NR" indicates piercing is not recommended

Metal Thickness		Travel Speed											
		Mild Steel				Aluminum				Stainless			
		Maximum		Optimum		Maximum		Optimum		Maximum		Optimum	
in.	mm	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)
0.25	6	150	3810	120	3048	125	3175	105	2667	88	2235.2	80	2032
0.50	13	55	1397	49	1244.6	61	1549.4	51	1295.4	37	939.8	31	787.4
0.75	19	25	635	22	558.8	35	889	31	787.4	15	381	13	330.2
1.00	25	13	330.2	12	304.8	20	508	15	381	10	254	8	203.2
1.25	32	9	228.6	7	177.8	13	330.2	10	254	7	177.8	5	127
1.50	38	5	127	3	76.2	10	254	7	177.8	3	76.2	3	76.2

Cutting Parameters for the PT-21AMX Torch

70AMP Data, Nozzle P/N 21329 (4485834), Heat Shield P/N 21326 (4485831)

Metal Thickness		Air Pressure		Stand-Off		Arc Voltage	Pierce Time
in.	mm	psig	bar	in.	mm	DC Volts	seconds
.125	3	75	5	.188	5	105	0.1
.250	6	75	5	.188	5	110	0.2
.500	13	85	6	.188	5	115	0.6
.750	19	85	6	.188	5	125	2.3
1.000	25	85	6	.250	6	135	NR
1.250	32	85	6	.250	6	150	NR

"NR" indicates piercing is not recommended

Metal Thickness		Travel Speed											
		Mild Steel				Aluminum				Stainless			
		Maximum		Optimum		Maximum		Optimum		Maximum		Optimum	
in.	mm	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)
.125	3	210	5334	190	4826	205	5207	185	4699	91	2311.4	80	2032
.250	6	101	2565.4	85	2159	100	2540	90	2286	61	1549.4	55	1397
.500	13	39	990.6	30	762	39	990.6	31	787.4	23	584.2	20	508
.750	19	15	381	13	330.2	25	635	20	508	12	304.8	9	228.6
1.000	25	7	177.8	5	127	12	304.8	9	228.6	7	177.8	6	152.4
1.250	32	5	127	3	76.2	9	228.6	5	127	3	76.2	3	76.2

40/50AMP Data, Nozzle P/N 21330 (4485833), Heat Shield P/N 21447 (4485832)

Metal Thickness		Air Pressure		Stand-Off		Arc Voltage	Pierce Time	Arc Current
in.	mm	psig	bar	in.	mm	DC Volts	seconds	amps
0.063	2	75	5	.125	3	110	0	40
0.125	3	75	5	.125	3	110	0.1	40
0.188	5	85	6	.125	3	110	0.2	50
0.250	6	85	6	.188	5	120	0.4	50
0.375	10	85	6	.188	5	125	0.6 / NR	50
0.500	13	85	6	.188	5	135	0.8 / NR	50

"NR" indicates piercing is not recommended

Metal Thickness		Travel Speed											
		Mild Steel				Aluminum				Stainless			
		Maximum		Optimum		Maximum		Optimum		Maximum		Optimum	
in.	mm	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)	ipm	(mm/min)
0.063	2	170	4318	155	3937	161	4089.4	150	3810	141	3581.4	130	330.2
0.125	3	112	2844.8	100	2540	141	3581.4	110	2794	79	2006.6	75	1905
0.188	5	111	2819.4	102	2590.8	105	2667	93	2362.2	57	1447.8	50	1270
0.250	6	71	1803.4	66	1676.4	83	2108.2	77	1955.8	37	939.8	30	762
0.375	10	43	1092.2	40	1016	37	939.8	31	787.4	15	381	10	254
0.500	13	21	533.4	18	457.2	13	330.2	9	228.6	11	279.4	8	203.2

(NOTE: Part numbers in parenthesis apply to "CE"/European units only.)

2.0 INSTALLATION - MECHANIZED PLASMA CUTTING PACKAGE

2.1 GENERAL

Proper installation is important for satisfactory and trouble-free operation of the PowerCut cutting package. It is suggested that each step in this section be studied carefully and followed closely.

2.2 EQUIPMENT REQUIRED

A source of clean, dry air that supplies 350 cfh at 80 psig (165.1 i/m @ 5.5 bars) is required for the cutting operation. The air supply should not exceed 150 psig (10.3 bars) (the maximum inlet pressure rating of the air filter-regulator supplied with the package).

2.3 LOCATION

Adequate ventilation is necessary to provide proper cooling of the PowerCut. The amount of dirt, dust, and excessive heat to which the equipment is exposed, should be minimized. There should be at least one foot of clearance between the PowerCut power source and wall or any other obstruction to allow freedom of air movement through the power source.

2.4 INSPECTION

- A. Remove the shipping container and all packing material and inspect for evidence of concealed damage which may not have been apparent upon receipt of the PowerCut. Notify the carrier of any defects or damage at once.
- B. Check container for any loose parts prior to disposing of shipping materials.
- C. Check air louvers and any other openings to ensure that any obstruction is removed.

CAUTION

Installing or placing any type of filtering device will restrict the volume of intake air, thereby subjecting the power source internal components to overheating. The warranty is void if any type of filter device is used.

! WARNING

ELECTRIC SHOCK CAN KILL! Precautionary measures should be taken to provide maximum protection against electrical shock. Be sure that all power is off by opening the line (wall) disconnect switch and by unplugging the power cord to the unit when connections are made inside of the power source.

2.5 PRIMARY ELECTRICAL INPUT CONNECTIONS - MECHANIZED PLASMA CUTTING PACKAGE

The PowerCut-1250 / 1500 consoles are equipped with approximately 10-ft. of 4-conductor input power cable for 3-phase connection. If single-phase connection is desired, tape back the red (lt. blue) wire on the input power cable. Connect the single-phase input to the white and black wires only. When operating this machine from a single-phase source, it must be connected to a dedicated 100 Amp feed. Due to the higher input current requirements, the duty cycle of the machine is lower than in three-phase operation.

Connect your air supply to the inlet connection of the filter-regulator.

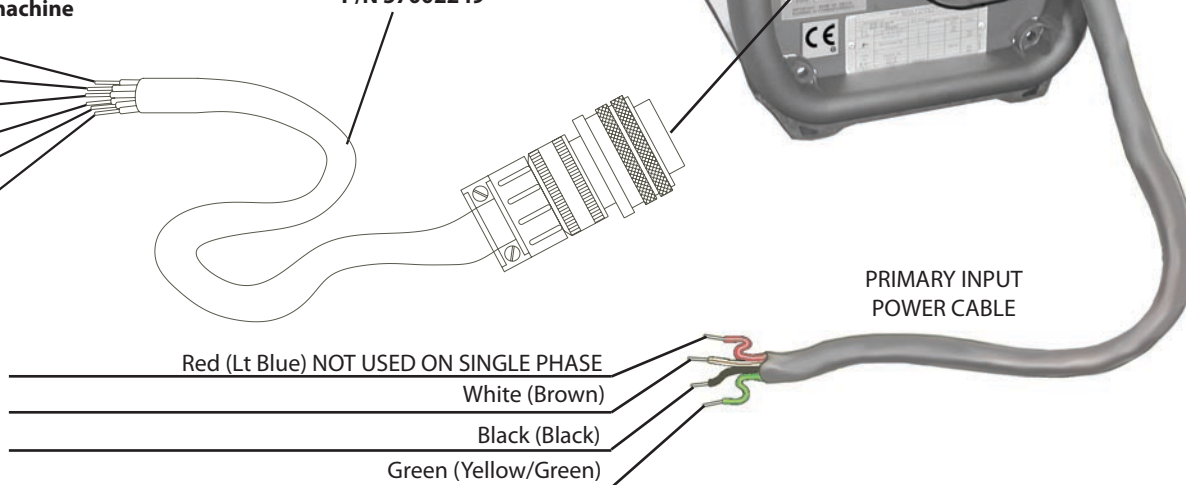
Prefiltered DRY AIR SUPPLY (Customer Supplied)
(90 to 150 psig max)
(6.2 to 10.3 bars max)

NUMBER	PIN	CONNECTION
8	H	Voltage Divider (-)
3	C	Voltage Divider (+)
9	I	Arc On signal from PS to CNC, Relay Closing
7	G	
14	N	Start signal from CNC to PS, Relay Closing
13	M	

To CNC machine

H
C
I
G
N
M

P/N 57002249



CUSTOMER FUSED LINE DISCONNECT SWITCH
(See Table 2.3 and WARNING in regards to chassis ground in Section 2.5.)

Figure 2-1. Input Connections

! WARNING

ELECTRIC SHOCK CAN KILL! Before making electrical input connections to the power source, "Machinery Lockout Procedures" should be employed. If the connections are to be made from a line disconnect switch, place the switch in the off position and padlock it to prevent inadvertent tripping. If the connection is made from a fusebox, remove the corresponding fuses and padlock the box cover. If it is not possible to use padlocks, attach a red tag to the line disconnect switch (or fuse box) warning others that the circuit is being worked on.

! WARNING

The chassis must be connected to an approved electrical ground. Failure to do so may result in electrical shock, severe burns or death.

! WARNING

Before making any connections to the power source output terminals, make sure that all primary input power to the power source is deenergized (off) at the main disconnect switch and that the input power cable is unplugged.

Before connecting to input power, make sure there is a line (wall) disconnect switch with fuses or circuit breakers at the main power panel. You may either use the factory-installed input power cable (4/c, type SO (90 °C), 10 ft (3.1 m) length) or provide your own input power leads. If you choose to provide your own, make sure they are insulated copper conductors. You must have two (single-phase) or three (three-phase) power leads and one ground wire. The wires may be heavy rubber covered cable or may be run in a solid or flexible conduit. Refer to Table 2-3 and 2-4 for recommended input conductors and line fuse sizes.

**Table 2-3. (PC-1250) Recommended Sizes
For Input Conductors and Line Fuses**

Input Requirements			Input & Gnd	Fuse
Volts	Phase	Amps	Conductor	Size
			CU/AWG	Amps
208	1	67A	6	100
208	3	33A/Ph.	6	50
230	1	61A	6	100
230	3	29A/Ph.	6	50
460	3	20	6	50
400	3	18	6mm ²	50
575	3	15	10	25

**Table 2-4. (PC-1500) Recommended Sizes
For Input Conductors and Line Fuses**

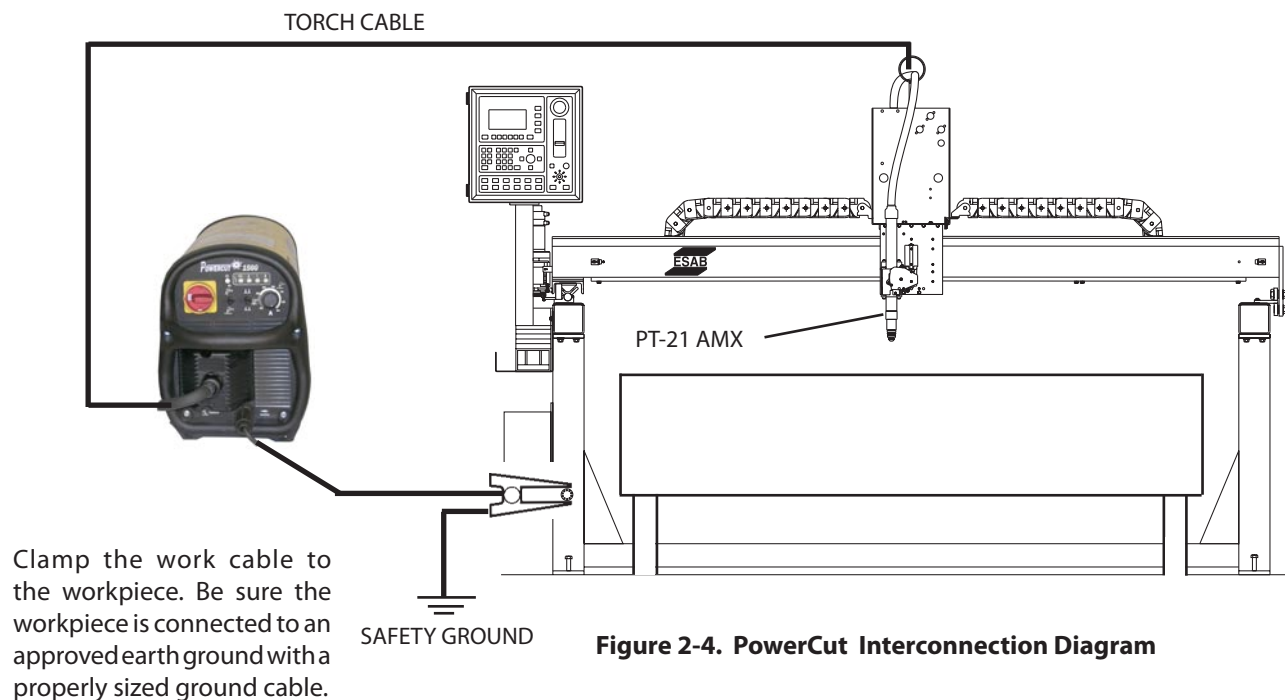
Input Requirements			Input & Gnd	Fuse
Volts	Phase	Amps	Conductor	Size
			CU/AWG	Amps
208	1	82A	6	100
208	3	44A/Ph.	6	80
230	1	74A	6	100
230	3	40A/Ph.	6	80
460	3	27	6	50
400	3	24	6mm ²	50
575	3	18	10	50

NOTE !!!

400V CE Mains Supply Requirements:

High power equipment may, due to the primary current drawn from the mains supply, influence the power quality of the grid. Therefore connection restrictions or requirements regarding the maximum permissible mains impedance or the required minimum supply capacity at the interface point to the public grid may apply for some types of equipment (see technical data). In this case it is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment may be connected.

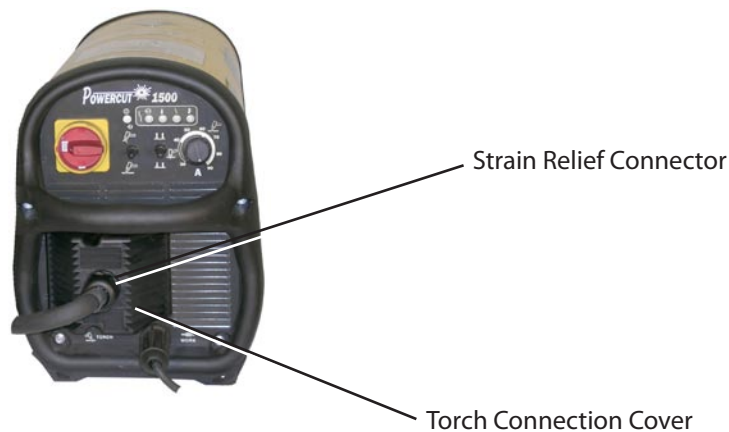
2.6 SECONDARY OUTPUT CONNECTIONS FOR MECHANIZED CUTTING



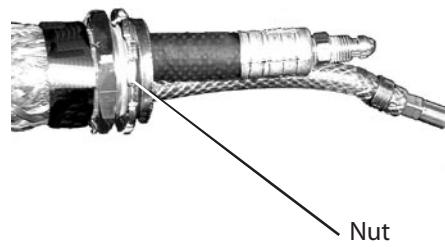
2.6.1 MECHANIZED TORCH INSTALLATION

Use the following procedures to install the PT-21AMX torch.

- A. Remove torch connection cover from front panel. Cover is held in place by two screws. If strain relief connector is present, remove before connecting the PT-21AMX torch.



B. Remove nut on torch cable assembly.



C. Insert torch cable assembly through opening in cover.

D. Re-attach cable nut and tighten.

E. Pull an adequate amount of hose through the cover to allow ease of hose connections.



F. Attach hoses and tighten.

G. Slide cover back into place and tighten screws.



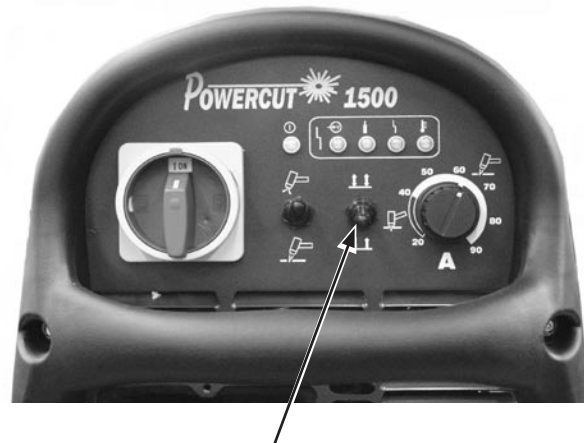
3.0 OPERATION

3.1 PowerCut-1250 / 1500 CONTROLS

NOTE: See Section 3.1.C, for complete operation instructions

NOTE: Trigger Lock Switch.

Mechanized Operation using the PT-21AMX torch - In mechanized operation the Trigger Lock function disabled. Instead, the switch functions as an "Auto-Restrike" selector. To turn Auto-Restrike "on" (grate cutting), place the switch in the up position. To turn Auto-Restrike "off", place the switch in the down position.



Trigger Lock Switch



**TRIGGER
LOCK**

Auto-Restrike "on" (Grate cutting)

UNLOCK

Auto-Restrike "off" (Standard cutting)

**WARNING**

Makesure powerswitch on the POWERCUT is in the OFF position before working on the torch.

**WARNING**

The PT-21 AMX torch head contains a gas flow check valve that acts in conjunction with the flow switch and circuitry within the power source. This system prevents the torch from being energized with high voltage if the torch switch is accidentally closed when the shield is removed. Always replace torch with the

(NOTE: Part numbers in parenthesis apply to "CE"/European units only.)

3.2 PT-21AMX TORCH USED WITH MECHANIZED PLASMA ONLY

1. The seat comes assembled to the front end of the torch. If the seat becomes damaged, the torch body must be replaced. DO NOT attempt to remove the seat from torch body.



2. Electrode holder assembly p/n 21332 (4485840) includes the baffle tube p/n 21374 (4485838). If baffle tube becomes damaged, it can be replaced by un-threading the damaged tube out of the holder. Use small hex end of the wrench p/n 21375 (4485842) in hex broach on the tube. Tighten tube securely but do not over-tighten.

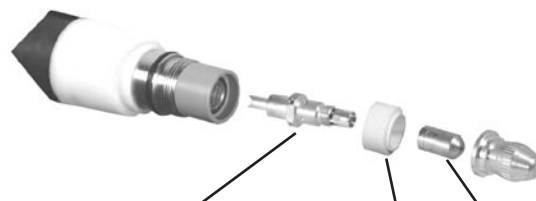
Electrode Holder Assembly

Baffle Tube



Wrench

3. Install the electrode insulator p/n 21373 (4485837) onto electrode holder assembly p/n 21332 (4485840) and then thread electrode p/n 21150 (0558004262) onto the electrode holder assembly. Assemble electrode firmly by hand. Do not use wrenches or pliers. These three parts combined are the electrode assembly.



21332 (4485840)

21373 (4485837)

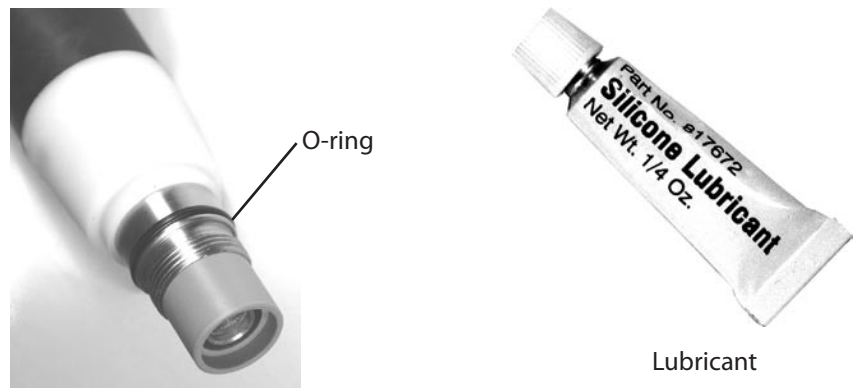
21150 (0558004262)

4. Install nozzle onto the electrode assembly by inserting small shoulder on electrode insulator into nozzle's rear opening. Place nozzle and electrode assembly into the heat shield. If front end of the torch is facing down as normal in a setup, the nozzle and electrode assembly can be stacked in the heat shield and then assembled to the torch. Be sure to use proper heat shield and nozzle combination.

(NOTE: Part numbers in parenthesis apply to "CE"/European units only.)



5. Apply a thin film of lubricant p/n 17672 (0558000443) to O-ring p/n 488157 (4485841).



6. Tighten heat shield fully to hold the parts in firm contact with each other and to the torch head. "Fully" means at least 3/16" (4.8mm) rotation after electrode seat contacts electrode holder.



To connect PT-21AMX torch to the console, connect the power cable of the torch to the "NEG" terminal and pilot arc cable to the "POS" terminal of the unit using pilot arc adaptor (p/n 19497 (4485843) - supplied with spare parts kit). A separate remote control switch cable is required for connecting to the switch receptacle on the console.

The front end of the torch contains a gas flow check valve that acts in conjunction with the circuitry provided in the power supply. This patented system provides a safety interlock preventing the torch from being accidentally energized with high voltage when the heat shield is removed and the torch switch is accidentally closed.

3.3 PT-21AMX POSSIBLE CUTTING ISSUES

Replace when eroded beyond
.06" (1.5mm) Depth.

CAUTION

REPLACE ELECTRODE BEFORE PITTING
BECOMES DEEPER THAN .06 INCH (1.5
MM)

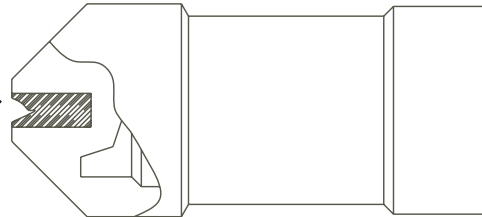


Figure 3-1. Electrode Wear Limit

NOTE: When replacing the nozzle, always inspect the electrode for wear. If more than .06" (1.5mm) of electrode has eroded, replace the electrode. If the electrode is used beyond this recommended wear limit, damage to the torch and power source may occur. Nozzle life is also greatly reduced when using the electrode below the recommended limit.